

REMARKS

By this Amendment, claims 1, 7, 9, 13, 17, 19-20, 22, 28, 30-31, and 38 are amended. Claims 35 and 42 were canceled previously. No new claims are added or are canceled. Accordingly, after entry of this Amendment, claims 1-34, 36-41, and 43-44 will remain pending. Currently, Claims 1-3, 7, 9, 13, 17, 19-20, 22, 27-28, 30-31, 36-38, and 43 are being examined. Claims 4-6, 8, 10-12, 14-16, 18, 21, 23-26, 29, 32-34, 39-41, and 44 have been withdrawn from consideration at this time.

In the Office Action dated June 14, 2007, the Examiner rejected claims 1-2, 7, 9, 17, 19-20, 22, and 27 under 35 U.S.C. § 103(a) as being unpatentable over Okase (US 6,228,173) in view of Lingampalli (US 6,228,173) and Imafuku (US 2004/0083970 A1). Next, claims 3 and 13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Okase, Lingampalli and Imafuku as applied to claims 1-2, 7, 9, 17, 19-20, 22, and 27 above, and further in view of Carducci et al. (2003/00337880 A1). The Examiner also rejected claims 28 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Okase, Lingampalli and Imafuku as applied to claims 1-2, 7, 9, 17, 19-20, 22, and 27 above, and further in view of Perlov et al. (2002/0170672 A1). In addition, the Examiner rejected claims 31, 36-38, and 43 under 35 U.S.C. § 103(a) as unpatentable over Carducci et al. (2003/00337880 A1) in view of Imafuku et al. (US 2004/0083970 A1). Applicants respectfully traverse these rejections.

MPEP § 2141 states:

“The question of obviousness must be resolved on the basis of these factual determinations. While each case is different and must be decided on its own facts, the Graham factors, including secondary considerations when present, are the controlling inquiries in any obviousness analysis. The Graham factors were reaffirmed and relied upon by the Supreme Court in its consideration and determination of obviousness in the fact situation presented in *KSR*, 550 U.S. at ___, 82 USPQ2d at 1391 (2007). The Supreme Court has utilized the Graham factors in each of its obviousness decisions since *Graham*. See *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 189 USPQ 449, reh’g denied, 426 U.S. 955 (1976); *Dann v. Johnston*, 425 U.S. 219, 189 USPQ 257 (1976); and *Anderson’s-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 163 USPQ 673 (1969). As stated by the Supreme Court in *KSR*, “While the sequence of these questions might be reordered in any particular case, the [Graham] factors continue to

define the inquiry that controls.” KSR, 550 U.S. at ___, 82 USPQ2d at 1391. Office personnel fulfill the critical role of factfinder when resolving the Graham inquiries. It must be remembered that while the ultimate determination of obviousness is a legal conclusion, the underlying Graham inquiries are factual. When making an obviousness rejection, Office personnel must therefore ensure that the written record includes findings of fact concerning the state of the art and the teachings of the references applied. In certain circumstances, it may also be important to include explicit findings as to how a person of ordinary skill would have understood prior art teachings, or what a person of ordinary skill would have known or could have done. Factual findings made by Office personnel are the necessary underpinnings to establish obviousness.

Once the findings of fact are articulated, Office personnel must provide an explanation to support an obviousness rejection under 35 U.S.C. 103. 35 U.S.C. 132 requires that the applicant be notified of the reasons for the rejection of the claim so that he or she can decide how best to proceed. Clearly setting forth findings of fact and the rationale(s) to support a rejection in an Office action leads to the prompt resolution of issues pertinent to patentability.”

The Applicants believe that Examiner has not clearly and correctly set forth the findings of fact and the rationale(s) to support one or more of the rejection in the Office Action and the Applicants believe that the rejections based on incorrect or unclear findings of fact are improper and should be withdrawn.

I.) Claims 1-2, 7, 9, 17, 19-20, 22 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okase (US 6,228,173) in view of Lingampalli (US 6,632,325) and Imafuku (US 200410083970 A1).

The Examiner rejects Claim 1, and the Examiner asserts that “Okase discloses a reduced maintenance processing system for treating a substrate comprising: a chemical treatment system for chemically altering exposed surface layers (Fig. 1 item 182) on the substrate comprising a temperature controlled chemical treatment chamber (Fig. 1 item 162); a thermal treatment system for thermally treating the chemically altered surface layers on the substrate (Fig. 2 item 22), the thermal treatment system comprising a temperature controlled thermal treatment chamber (Fig. 2 item 44) having a protective barrier formed on at least a portion of an interior surface (Fig. 2 item 68, Column 6 Lines 52-54); and a thermal insulation

assembly coupled to the thermal treatment system and the chemical treatment system (Fig. 1 item 3)". The Applicants disagree with this "factual finding" since item 162 and item 182 could not be found in Fig. 1 of Okase. The Applicants believe that this rejection of claim 1 is improper and should be withdrawn because the rejection is based on an incorrect factual finding.

As noted in a prior response, there is no discussion of any protective barrier layer in Okase. Moreover, as argued by the Applicants previously, it is unlikely that one skilled in the art would apply a protective barrier layer to a component (thin plate 68) made from Al_2O_3 .

The Examiner admits that "Okase does not expressly disclose the chemical treatment and thermal treatment chambers have a protective barrier formed on at least a portion of an interior surface (Column 5 Lines 31 -42). The Examiner asserts that Lingampalli discloses a chemical and thermal treatment chamber with a protective barrier formed on at least a portion of the interior surface. Okase and Lingampalli are analogous art because they are from the same field of endeavor, namely semiconductor processing apparatus.

Applicants believe that Lingampalli does not cure the deficiencies noted with respect to the Okase et al. and, therefore, does not assist the Examiner with a rejection of the claims.

The Examiner states that it would have been obvious to a person of ordinary skill in the art to form Okase's apparatus including a chemical treatment and thermal treatment chamber having a protective barrier formed on at least a portion of an interior surface in view of the teaching of Lingampalli. The suggestion or motivation for doing so would have been to provide a chemical and thermal treatment chamber with internal protective coating (Column 5 Lines 31-42). Therefore, it would have been obvious to combine Okase with Lingampalli for the benefit of a chemical treatment and thermal treatment chamber having a protective barrier formed on at least a portion of an interior surface to obtain the invention specified in Claim 1.

The Examiner admits that Okase in view of Lingampalli does not expressly state the thermal insulation assembly comprises a protective barrier layer comprising one of Al_2O_3 , Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and DyO_3 on at least one exposed surface.

The Examiner states the Imafuku teaches the thermal insulation assembly comprises a protective barrier on at least one exposed surface for the purpose of preventing damage attributable to plasma on exposed surfaces and the extent of metal contamination and dust generation is lowered (Abstract and Paragraph 27, Lines 1-6). Okase, Lingampalli, and

Imafuku are analogous art because they are from the same field of endeavor, namely semiconductor processing apparatus.

The Examiner further admits that “Imafuku does not disclose the provision of a protective barrier layer on all of the surfaces of the apparatus exposed to plasma”, but alleges “it would have been obvious to one of ordinary skill in the art to do so with expectation of achieving the same results described in Imafuku.

The Applicants believe that this rejection of claim 1 is improper and should be withdrawn because the rejection is based on an incorrect factual finding. The Applicants believe the rejections of claim 1 based on the combination of Okase, Lingampalli, and Imafuku are improper because the Examiner motivation is based on “preventing damage attributable to plasma”, and the Applicants invention does not require “preventing damage attributable to plasma” because the Applicants’ invention does not operate using a plasma.

The Applicants have amended Claim 1 to more clearly recite their invention and believe that amended Claim 1 is patentable over the cited art.

Accordingly, for the same reasons that Okase, Lingampalli, and Imafuku fail to render obvious Claim 1, the references are equally inapplicable to Claims 2, 7, 9, 17, 19-20, 22 and 27.

The Examiner rejects Claim 2, and the Examiner asserts: “At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the apparatus of Okase in view of Lingampalli including a thermal insulation assembly comprises a protective barrier on at least one exposed surface. The suggestion or motivation for doing so would have been to provide a stable condition maintainable even when it is exposed to plasma and to prevent damage attributable to plasma on exposed surfaces and to lower the extent of metal contamination and dust generation (Abstract and Paragraph 27, Lines 6-7). Therefore, it would have been obvious to combine Okase in view of Lingampalli with Imafuku for the benefit of having a thermal insulation assembly comprising a protective barrier on at least one exposed surface to obtain the invention specified in Claim 2.”

The Applicants believe that this rejection of Claim 2 is improper and should be withdrawn because the rejection is based on an incorrect factual finding. The Applicants believe the rejection of claim 2 based on the combination of Okase, Lingampalli, and Imafuku is improper because the Examiner motivation is based on an incorrect factual finding “to

prevent damage attributable to plasma”, and the Applicants invention does not produce “damage attributable to plasma” because the Applicants’ invention does not operate using a plasma.

The Examiner rejects Claim 7, and the Examiner asserts “Lingampalli discloses a processing system, wherein the protective barrier on the interior surface of the chemical treatment chamber comprises at least one of Al_2O_3 , Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and DyO_3 (Column 5 Lines 31 -42).”

The Applicants believe that this rejection of claim 7 is improper and should be withdrawn because the rejection is based on an incorrect factual finding. The Applicants believe the rejection of claim 7 based on Lingampalli is improper because Lingampalli does not teach a protective barrier layer that comprises at least one of Al_2O_3 , Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and DyO_3 . Applicants believe Lingampalli teaches a coating 220 that generally comprises a layer of aluminum fluoride (AlF_3), magnesium fluoride (MgF_2) or other material that prevents penetration of fluoride and/or fluoride containing compounds therethrough. (Lingampalli at col. 5, lines 43-46.) Alternatively, a coating 602 may be used that is capable of resisting cracking, flaking and the like when exposed to aggressive materials, such as fluorine, while simultaneously protecting the underlying material from attack from the aggressive environment. (Lingampalli at col. 7, lines 24-33.) The coating 602 is generally identical to the coating 220. (Lingampalli at col. 7, lines 27-28.) The coating 602 is resistant to degradation in harsh environments such as environments containing NF_3 . (Lingampalli at col. 7, lines 36-39.)

In fact, the Applicants respectfully submit that the discussion in Lingampalli of aluminum fluoride (AlF_3) or magnesium fluoride (MgF_2) as the coatings 220, 602 that may be employed to resist degradation to a fluorine-containing environment would tend to lead those skilled in the art away from the combination recited by the claims. It is improper to combine references where the references teach away from their combination. In re Grasselli, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)

The Applicants have amended Claim 7 to more clearly recite their invention and believe that amended Claim 7 is patentable over the cited art.

The Examiner rejects Claim 9, and the Examiner asserts: “Okase discloses a processing system as claimed in claim 1, wherein the chemical treatment system further

comprises a temperature controlled substrate holder (Fig. 2 item 44) making a protective barrier formed on at least a portion thereof (Fig. 2 item 68), the protective barrier on the temperature controlled substrate holder mounted within the chemical treatment chamber comprising at least one of Al_2O_3 , Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and DyO_3 (Column 6 Lines 51-54).”

As noted in a prior response, there is no discussion of any protective barrier layer in Okase. Moreover, as argued by the Applicants previously, it is unlikely that one skilled in the art would apply a protective barrier layer to a component (thin plate 68) made from Al_2O_3 .

The Applicants have amended Claim 9 to more clearly recite their invention and believe that amended Claim 9 is patentable over the cited art.

The Examiner rejects Claim 17, and the Examiner asserts: “Lingampalli discloses a processing system, wherein the protective barrier on the interior surface of temperature controlled thermal treatment chamber comprises at least one of Al_2O_3 , Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and DyO_3 (Column 5 Lines 31-42).”

The Applicants believe that the rejection of claim 17 is improper and should be withdrawn because the rejection is based on an incorrect factual finding. The Applicants believe the rejection of claim 17 based on Lingampalli is improper because Lingampalli does not teach a protective barrier layer that comprises at least one of Al_2O_3 , Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and DyO_3 .

The Applicants have amended Claim 17 to more clearly recite their invention and believe that amended Claim 17 is patentable over the cited art.

The Examiner rejects Claim 19, and the Examiner asserts: “Okase discloses a processing system wherein the thermal treatment system further comprises a temperature controlled substrate holder mounted within the thermal treatment chamber (Fig. 2 item 44) and having a protective barrier formed on at least a portion of an exposed surface (Fig. 2 item 68), the protective barrier on the exposed surface of the temperature controlled substrate holder mounted within the temperature controlled thermal treatment chamber comprises at least one of Al_2O_3 , Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and DyO_3 (Column 6 Lines 51 -54).

The Applicants believe that the rejection of claim 19 is improper and should be withdrawn because the rejection is based on an incorrect factual finding. The Applicants believe the rejection of claim 19 based on Okase is improper because Okase does not teach a

protective barrier layer that comprises at least one of Al_2O_3 , Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and DyO_3 as taught by the Applicants' invention.

The Applicants have amended Claim 19 to more clearly recite their invention and believe that amended Claim 19 is patentable over the cited art.

The Examiner rejects Claim 20 asserting that: "Imafuku discloses a processing system, wherein the thermal insulation assembly comprises a gate valve assembly, wherein a protective barrier is formed on at least a portion of an exposed surface of the gate valve assembly (Fig. 2 items 200 and 300).

The Applicants believe that this rejection of Claim 20 is improper and should be withdrawn because the rejection is based on an incorrect factual finding. The Applicants believe the rejection of claim 20 based on the combination of Okase, Lingampalli, and Imafuku is improper because the Applicants gate valve is not exposed to plasma because the Applicants' invention does not operate using plasma.

The Applicants have amended Claim 20 to more clearly recite their invention and believe that amended Claim 20 is patentable over the cited art.

The Examiner rejects Claim 22 asserting that: "Imafuku discloses a processing system, wherein the protective barrier on the exposed surface of the gate valve assembly comprises at least one of Al_2O_3 , Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and DyO_3 (Paragraph 27 Lines 1-6)."

The Applicants believe that the rejection of Claim 22 is improper and should be withdrawn because the rejection is based on an incorrect factual finding. The Applicants believe the rejection of claim 22 based on the combination of Okase, Lingampalli, and Imafuku is improper because the Applicants gate valve is not exposed to plasma because the Applicants' invention does not operate using plasma.

The Applicants have amended Claim 22 to more clearly recite their invention and believe that amended Claim 22 is patentable over the cited art.

The Examiner rejects Claim 27 asserting that: "Okase discloses a processing system, wherein the thermal treatment system further comprises a substrate lifter assembly coupled to the thermal treatment chamber for vertically translating the substrate between a transfer plane and the substrate holder (Fig. 2 item 62)."

The Applicants believe that the rejection of Claim 27 is improper and should be withdrawn because Claim 27 depends from Claim 1, and the rejection of Claim 1 is improper because the rejection of Claim 1 is based on one or more incorrect factual findings documented herein.

II.) Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okase, Lingampalli and Imafuku as applied to claims 1-2, 7, 9, 17, 19-20, 22 and 27 above, and further in view of Carducci (US 200310037880 A1).

Accordingly, for the same reasons that Okase, Lingampalli, and Imafuku fail to render obvious Claim 1, the references are equally inapplicable to Claims 3 and 13.

The Examiner rejects Claim 3 asserting that: "Okase discloses a processing system, wherein the chemical treatment system further comprises a temperature controlled substrate holder mounted within the chemical treatment chamber (Fig. 14 item 162) and having a protective barrier formed on at least a portion of an exposed surface (Fig. 14 item 134, Column 12 Lines 59-60), a vacuum pumping system coupled to the chemical treatment chamber (Fig. 14 item 179), the thermal treatment system further comprises a temperature controlled substrate holder mounted within the thermal treatment chamber (Fig. 2 item 44) and having a protective barrier formed on at least a portion of an exposed surface (Fig. 2 item 68), and a vacuum pumping system coupled to the thermal treatment chamber (Fig. 2 item 32)."

The Applicants disagree with the "factual findings" presented by the Examiner since "(Fig. 14 item 134, Column 12 Lines 59-60)" is "made of a corrosion-resistant material, such as aluminum", and does not have a *protective barrier layer* as taught by the Applicants' invention. In addition, the Applicants disagree with other "factual findings" presented by the Examiner since "(Fig. 2 item 68)" does not have a *protective barrier layer* as taught by the Applicants' invention. The Applicants believe that this rejection of claim 3 is improper and should be withdrawn because the rejection is based on these incorrect factual findings.

The Examiner asserts: "Lingampalli discloses a gas distribution plate comprising a plurality of gas injection orifices and having a protective barrier formed on at least a portion of an exposed surface of the gas distribution plate and at least a portion of an exposed surface of each orifice (Fig. 1 item 118, Column 5 Lines 38-42)." Applicants believe Lingampalli teaches a coating 220 that generally comprises a layer of aluminum fluoride (AlF₃), magnesium fluoride (MgF₂) or other material that prevents penetration of fluoride and/or

fluoride containing compounds therethrough. Applicants believe Lingampalli does not teach a protective barrier layer comprising at least one of Al_2O_3 , Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and DyO_3 as taught by the Applicants' invention. In addition, the Applicants respectfully submit that the discussion in Lingampalli of aluminum fluoride (AlF_3) or magnesium fluoride (MgF_2) as the coatings 220, 602 that may be employed to resist degradation to a fluorine-containing environment would teach away from the teachings of the Applicants invention. It is improper to combine references where the references teach away from their combination. In re Grasselli, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)

The Examiner admits that "Okase in view of Lingampalli does not expressly state the gas distribution plate is coupled to a temperature controlled gas distribution system for introducing a process gas into the chemical treatment chamber; and the processing system further comprises a control system coupled to the chemical treatment system and the thermal treatment system, and configured to control at least one of a chemical treatment chamber temperature, a chemical treatment gas distribution system temperature, a chemical treatment substrate holder temperature, a chemical treatment substrate temperature, a chemical treatment processing pressure, a chemical treatment gas flow rate, a thermal treatment chamber temperature, a thermal treatment substrate holder temperature, a thermal treatment substrate temperature, a thermal treatment processing pressure, and a thermal treatment gas flow rate."

The Examiner attempts to use Carducci to overcome the short-comings of the combination of Okase and Lingampalli, and the Examiner alleges that "Carducci teaches the gas distribution plate is coupled to a temperature controlled gas distribution system for introducing a process gas into the chemical treatment chamber (Fig. 1 item 140); and the processing system further comprises a control system coupled to the chemical treatment system and the thermal treatment system, and configured to control at least one of a chemical treatment chamber temperature, a chemical treatment gas distribution system temperature, a chemical treatment substrate holder temperature, a chemical treatment substrate temperature, a chemical treatment processing pressure, a chemical treatment gas flow rate, a thermal treatment chamber temperature, a thermal treatment substrate holder temperature, a thermal treatment substrate temperature, a thermal treatment processing pressure, and a thermal treatment gas flow rate (Fig. 1 item 140). Okase, Lingampalli and Carducci are analogous art

because they are from the same field of endeavor, namely semiconductor processing apparatus.”

The Applicants disagree with the “factual findings” presented above by the Examiner since “(Fig. 1, item 140)” is NOT the chemical treatment chamber. The Applicants believe that this rejection of claim 3 is improper and should be withdrawn because the rejection is based on this incorrect factual finding.

As noted in an earlier response filed on April 10, 2006, the Applicants believe Carducci et al. describes a dielectric etch chamber with an expanded process window where the processing chamber 100 includes a chamber liner 104, illustrated as a first liner 134 and a second liner 118, disposed adjacent to the walls 106, 108 and the lid 102. (Carducci et al. at paragraph [0055].) The first liner 134 is fabricated from a thermally conductive material such as anodized aluminum, stainless steel, ceramic, or other compatible material. (Carducci et al. at paragraph [0080].) The second liner 118 is fabricated from a thermally conductive material such as anodized aluminum, stainless steel, or other compatible material. (Carducci et al. at paragraph [0091].) Carducci et al. does NOT describe a construction for the processing chamber 100 including, among other features, a protective barrier layer that comprises at least one of Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and DyO_3 as taught by the Applicants’ invention.

The Examiner further alleges that: “At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the apparatus of Okase in view of Lingampalli including the gas distribution plate is coupled to a temperature controlled gas distribution system for introducing a process gas into the chemical treatment chamber; and the processing system further comprises a control system coupled to the chemical treatment system and the thermal treatment system, and configured to control at least one of a chemical treatment chamber temperature, a chemical treatment gas distribution system temperature, a chemical treatment substrate holder temperature, a chemical treatment substrate temperature, a chemical treatment processing pressure, a chemical treatment gas flow rate, a thermal treatment chamber temperature, a thermal treatment substrate holder temperature, a thermal treatment substrate temperature, a thermal treatment processing pressure, and a thermal treatment gas flow rate in view of the teaching of Carducci. Therefore, it would have been

obvious to combine Okase in view of Lingampalli with Carducci to obtain the invention specified in Claim 3.”

The Examiner rejects Claim 13 asserting that: “Carducci teaches a processing system, wherein the chemical treatment system further comprises a gas distribution plate comprising a plurality of gas injection orifices (Fig. 1 item 350) and having a protective barrier formed on at least a portion of an exposed surface of the gas distribution plate (Paragraph 91 Lines 2-4) and at least a portion of an exposed surface of each orifice (Paragraph 99 Lines 8-12), wherein the gas distribution plate is coupled to a temperature controlled gas distribution system for introducing a process gas into the chemical treatment chamber (Fig. 1 item 140).

The Applicants disagree with the “factual findings” presented above by the Examiner since “(Fig. 1, item 140)” is NOT the chemical treatment chamber. The Applicants believe that this rejection of claim 13 is improper and should be withdrawn because the rejection is based on this incorrect factual finding.

The Applicants have amended Claim 13 to more clearly recite their invention and believe that amended Claim 13 is patentable over the cited art.

III.) Claims 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okase, Lingampalli and Imafuku as applied to claims 1-2, 7, 9, 17, 19-20, 22 and 27 above, and further in view of Perlov (US 200210170672 A1).

Accordingly, for the same reasons that Okase, Lingampalli, and Imafuku fail to render obvious Claim 1, the references are equally inapplicable to Claims 28, and 30.

The Examiner rejects Claim 28 asserting that: “Okase, Lingampalli and Imafuku disclose a processing system substantially as claimed and as described above.” In addition, the Examiner admits “Okase, Lingampalli and Imafuku do not expressly state the substrate lifter assembly comprises a blade having three or more tabs for receiving the substrate and having a protective barrier formed on at least a portion of an exposed surface, and a drive system for vertically translating the substrate between the substrate holder and a transfer plane.”

The Examiner alleges: “Perlov teaches the substrate lifter assembly comprises a blade having three or more tabs (Fig. 1 items 25a-c) for receiving the substrate and having a protective barrier formed on at least a portion of an exposed surface (Paragraph 27 Lines 1-4), and a drive system for vertically translating the substrate between the substrate holder and a

transfer plane (Fig 2 item 24). Okase, Lingampalli and Perlov are analogous art because they are from the same field of endeavor, namely, semiconductor processing apparatus. At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the apparatus disclosed in Okase, Lingampalli and Imafuku including the substrate lifter assembly comprises a blade having three or more tabs for receiving the substrate and having a protective barrier formed on at least a portion of an exposed surface, and a drive system for vertically translating the substrate between the substrate holder and a transfer plane in view of the teaching of Perlov. The suggestion or motivation for doing so would have been to provide a lift that does not produce particles or scratch a substrate during contact (Paragraph 27 Lines 1-5). Therefore, it would have been obvious to combine Okase in view of Lingampalli with Perlov to obtain the invention specified in Claim 28. It is also noted that Perlov teaches a processing system, wherein a protective barrier is formed on exposed surfaces (Paragraph 27 Lines 1-5).

The Applicants disagree with the “factual findings” presented above by the Examiner since the “tabs (Fig. 1 items 25a-c)” DO NOT have “a protective barrier formed on at least a portion of an exposed surface (Paragraph 27 Lines 1-4)” as asserted by the Examiner. (Paragraph 27 Lines 1-4) states “The substrate supports 21a-b are preferably made of a ceramic such as alumina, quartz or any other hard material which is compatible with semiconductor substrates and does not produce particles or scratch a substrate during contact therewith.” The Applicants believe (Paragraph 27 Lines 1-4) does not teach, suggest, or motivate a protective barrier as asserted by the Examiner. The Applicants believe that this rejection of claim 13 is improper and should be withdrawn because the rejection is based on these incorrect factual findings.

The Applicants note that the Office Action seems to be silent concerning the factual findings for the rejection of Claim 30.

The Applicants have amended Claim 30 to more clearly recite their invention and believe that amended Claim 30 is patentable over the cited art.

IV.) Claims 31, 36-38 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carducci (US 200310037880 A1) in view of Imafuku (US 200410083970 A1).

The Examiner rejects Claim 31 asserting that: "Carducci discloses a chemical treatment system for chemically altering exposed surface layer on the substrate substantially as claimed and comprising: a temperature controlled chemical treatment chamber having a protective barrier formed on at least a portion of an interior surface (Paragraph 80 Lines 1-4); a temperature controlled substrate holder mounted within the chemical treatment chamber (Fig. 1 item 112); a vacuum pumping system coupled to the chemical treatment chamber (Fig. 1 item 109), and a gas distribution plate comprising a plurality of gas injection orifices (Fig. 1 item 350), the gas distribution plate being coupled to a temperature controlled gas distribution system for introducing a process gas into the chemical treatment chamber (Fig. 1 item 140). The protective barrier on the interior surface of the chemical treatment chamber comprises at least one of Al_2O_3 , Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and Dy_2O_3 (Paragraph 80 Lines 1-4).

The Examiner admits that "Carducci does not disclose the thermal insulation assembly comprises a protective barrier layer comprising one of Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and Dy_2O_3 and Dy_2O_3 on at least one exposed surface."

The Examiner further asserts:

"Imafuku teaches the thermal insulation assembly comprises a protective barrier on at least one exposed surface for the purpose of preventing damage attributable to plasma on exposed surfaces and the extent of metal contamination and dust generation is lowered (Abstract and Paragraph 27, Lines 1-6). Okase, Lingampalli, and Imafuku are analogous art because they are from the same field of endeavor, namely semiconductor processing apparatus. Although Imafuku does not disclose the provision of a protective barrier layer on all of the surfaces of the apparatus exposed to plasma, it would have been obvious to one of ordinary skill in the art to do so with expectation of achieving the same results described in Imafuku.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the apparatus of Okase in view of Lingampalli including a thermal insulation assembly comprises a protective barrier on at least one exposed surface. The suggestion or motivation for doing so would have been to provide a stable condition maintainable even when it is exposed to plasma and to prevent damage attributable to plasma on exposed surfaces and to lower the extent of metal contamination and dust generation (Abstract and Paragraph 27, Lines 6-7). Therefore, it would have been obvious to combine Okase in view of

Lingampalli with Imafuku for the benefit of having a thermal insulation assembly comprising a protective barrier on at least one exposed surface to obtain the invention specified in Claim 2.”

The Applicants believe that the rejection of claim 31 is improper and should be withdrawn because the rejection is based on these incorrect factual findings. The Applicants believe this fact pattern is also incorrect since the Examiner is confusing Claims 30 and 2.

The Applicants have amended Claim 31 to more clearly recite their invention and believe that amended Claim 31 is patentable over the cited art.

The Examiner rejects Claim 36 asserting that: “Carducci discloses chemical treatment system of claim 31, wherein the substrate holder has a protective barrier formed on at least a portion of an exposed surface (Paragraph 59 Lines 1-6).

The Applicants believe that the rejection of claim 36 is improper and should be withdrawn because the rejection is based on these incorrect factual findings. The Applicants believe this fact pattern is also incorrect since the Examiner is confusing Claims 36 and 31.

The Examiner rejects Claim 37 asserting that: “Carducci discloses a chemical treatment system of claim 31, wherein a protective barrier is formed on .at least a portion of an exposed surface of the gas distribution plate and on at least a portion of an exposed surface of each orifice (Paragraph 80 Lines 1-4).”

The Applicants believe that the rejection of claim 37 is improper and should be withdrawn because the rejection is based on these incorrect factual findings. The Applicants believe this fact pattern is also incorrect since the Examiner is confusing Claims 37 and 31.

The Examiner rejects Claim 38 asserting that: “Carducci discloses a thermal treatment system for thermally treating the chemically altered surface layers on the substrate (Fig. 1 item 112), the thermal treatment system comprising: a temperature controlled thermal treatment chamber having a protective barrier formed on at least a portion of an interior surface (Fig. 1 item 121); a temperature controlled substrate holder mounted within the thermal treatment chamber (Fig. 1 item 124); a vacuum pumping system coupled to the thermal treatment chamber (Fig. 1 item 109); and a temperature controlled upper assembly coupled to the thermal treatment chamber (Fig. 1 item 140). The protective barrier on the interior surface of the thermal treatment chamber comprises at least one of Al_2O_3 , Y_2O_3 , Sc_2O_3 , Sc_2F_3 , YF_3 , La_2O_3 , CeO_2 , Eu_2O_3 , and DyO_3 (Paragraph 80 Lines 1-4).”

The Applicants believe that the above factual findings are incorrect because (Paragraph 80 Lines 1-4) states “Continuing with FIG. 4, the first liner 134 is fabricated from a thermally conductive material, such as for example, anodized aluminum, stainless steel, ceramic or other compatible material.” Applicants believe that (Paragraph 80 Lines 1-4) does not teach a protective barrier as alleged by the Examiner. The Applicants believe that the rejection of claim 38 is improper and should be withdrawn because the rejection is based on these incorrect factual findings.

The Applicants have amended Claim 38 to more clearly recite their invention and believe that amended Claim 38 is patentable over the cited art.

With respect to Claim 43, the Examiner asserts: “Carducci discloses a thermal treatment system as claimed in claim 38, wherein the substrate holder has a protective barrier formed on at least one exposed surface (Paragraph 59 Lines 1-6).”

The Applicants believe that the rejection of claim 43 is improper and should be withdrawn because the rejection is based on these incorrect factual findings. The Applicants believe this fact pattern is also incorrect since the Examiner is confusing Claims 43 and 38.

The Applicants believe that the Examiner’s obviousness (103a) rejections are based on improper hindsight reasoning and are improper because the Examiner is using “knowledge gleaned only from applicant’s disclosure” to make the rejections. In re McLaughlin 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971).

Each of the Examiner’s rejections having been addressed, the Applicants respectfully submit that Claims 1-3, 7, 9, 13, 17, 19-20, 22, 27-28, 30-31, 36-38, and 43 are now in a condition for allowance. The Applicant, therefore, respectfully requests that the Examiner withdraw the obvious rejections of the claims and pass this application quickly to issuance.

If the undersigned agent has overlooked a teaching in any of the cited references that is relevant to the Allowability of the claims, the Examiner is requested to specifically point out where such teaching may be found. Further, if there are any informalities or questions that can be addressed via telephone, the Examiner is encouraged to contact the undersigned agent at 480-539-2105 or by email at jim.klekotka@us.tel.com.

Charge Deposit Account

Please charge our Deposit Account No. 50-3451 for any additional fee(s) that may be due in this matter, and please credit the same deposit account for any overpayment.

Respectfully submitted,

/James Klekotka/

Date: 11/14/2007

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